Project Sequoia 2000

RTIP In the S2Knet - Preliminary Report

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March 3, 1993

Initial S2Knet Network Configuration:

- **local FDDI rings at individual sites (100 Mbps)**
- **UNIX-based workstations and servers attached to local FDDI’s**
- **T1 leased lines for WAN distribution (1.54 Mbps)**
- **DECstation 5000/240 FDDI/T1 routers**
- **communications based on DARPA Internet Protocols (TCP/IP, UDP/IP, etc.)**

RTIP Protocol Suite:

- **designed and developed by Dr. Ferrari's Tenet group (U.C. Berkeley and ICSI)**
- **coexists with DARPA Internet protocols**
- **RCAP**
  - **establishes real-time channels**
  - **performs network admissions control**
  - **bandwidth reservation, delay bounds, jitter control**
- **RTIP**
  - **network layer protocol - coexists with IP**

RTIP Protocol Suite (Cont’d):

- transfers packets on real-time channels
- satisfies performance guarantees on channel

o RMTP

- real-time message transport protocol

o CMTP

- continuous-media transport protocol

RTIP Port to S2Knet:

- merged Tenet group’s RMTP/RTIP code with S2Knet router kernel
- added multiple network interface support for real-time queues
- added RTIP queueing discipline to T1 driver
- created T1 datalink layer header for protocol coexistence
- built new router kernels with RTIP support
- distributed RTIP router kernels to S2Knet backbone

Current Status:

- **existing DARPA Internet protocols and applications working at full bandwidth along all paths**
- **basic RTIP send/receive working between hosts and routers**
- **RTIP send/receive not yet working over multiple S2Knet router hops**

Ongoing Work:

- **get RTIP send/receive working along entire path (1 week)**
- **test RCAP over S2Knet backbone for channel administration, admissions control (2-3 weeks)**
- **measure RTIP performance on the S2Knet backbone (2-4 weeks)**
- **produce "RTIP on S2Knet" technical report (3-5 weeks)**

Future Work:

Working with other researchers:

- **test and measure performance of real-time applications end-to-end over the S2Knet:**
  - **Tenet Interop demo**
  - **DECspin**
  - **Dr. Larry Rowe’s Continuous Media Player**
- **port the CMTP transport layer protocol to the S2Knet**
- **manage port to T3 (45 Mbps)**